

Material - Benchmarking methodologies to improve emission inventories – 1st Webinar

S LOPEZ-APARICIO, M. GUEVARA, P. THUNIS, E. PISONI AND M. MARIONI

Contents

Agenda	2
Protocol for the FAIRMODE Emission Composite Map	3
Questions for 2 nd Webinar	6

Agenda

	Topic	Responsible
9:00-9:10	Welcome and Introduction <ul style="list-style-type: none">▪ Intro▪ Participants introduction▪ Purpose of the webinar	Susana Lopez-Aparicio
9:10-9:25	Methodology behind the EU Composite Map for Emission	Philippe Thunis
9:25-10:10	Catalonia and Norway as practical examples	Marc Guevara Susana Lopez-Aparicio
10:10-10:30	Open Questions and Discussion	All
10:30-10:40	Summary of the Protocol	Marc Guevara
10:40-10:50	Final Remarks <ul style="list-style-type: none">▪ Homework,▪ The 2nd Webinar	Susana Lopez-Aparicio and Marc Guevara

Protocol for the FAIRMODE Emission Composite Map

1. Select polygon type (NUTS or FUA; Figure 1).
2. Select the EU wide inventory to consider for the comparison exercise (i.e., CAMS-REG, EDGAR, EMEP; Figure 1). For each inventory, different reference years are available.
3. Select the bottom-up inventory to consider for the comparison exercise (Figure 1).
4. Keep the "Min Emission Consideration" and "Inconsistency Threshold" default values (0.5 and 2.0; Figure 1)
5. Click "Plot" (Figure 1)
6. Click the "Diamond diagram" (Figure 1) to evaluate inconsistencies in term country level (LPT + LSS; x-axis) and due to spatial distribution of emissions (FAS; y-axis). Inconsistencies aligned along the x-axis indicate issues in term of country level (LPT or LSS), whereas inconsistencies aligned along the y-axis indicate issues related to the spatial distribution of emissions. Assess how many inconsistencies there are, which type, sector, pollutant, over- vs underestimation (Figure 2).

When you position the mouse on top of the symbol, you get detailed information:

- a. **Sector:** sector name
- b. **Pollutant:** pollutant name
- c. **Spatialisation (FAS):** Ratio of the two inventory estimates for spatialisation for the selected sector and pollutant. It assesses how country emissions are distributed to a given NUTS/FUA.
- d. **Country Pollutant Total (LPT):** Ratio of the two inventory country total estimates for the selected sector and pollutant.
- e. **Country Sectorial Share (LSS):** Ratio of the two inventory estimates for the country sectoral share for the selected sector and pollutant. It assesses how country emissions are distributed to sectors.
- f. **<name_of_eu_wide_inventory>:** total annual emissions (kt/year) reported by the selected EU-wide inventory, sector, pollutant and FUA/NUTS code.
- g. **<name_of_bottom_up_inventory>:** total annual emissions (kt/year) reported by the selected bottom-up inventory, sector, pollutant and FUA/NUTS code

7. Click the "All inconsistencies overview" (Figure 3). In this step, identify the total number of inconsistencies (from top to bottom): 1) per sector level, 2) per pollutant and 3) per type of inconsistency (LPT, LSS and FAS).
8. Click "Priority inconsistencies" to identify main inconsistencies (Figure 1); (from top to bottom; Figure 4):
 - a. LPT: total emissions at the country level (pollutant);
 - b. LSS: share of emissions across sectors (pollutant and sector),
 - c. FAS: spatial distribution of emissions across NUTS/FUA elements (pollutant, sector and NUTS/FUA element)
9. On the map on the right, click on the icons that appear on top of each NUTS/FUA to check the details of the FAS main inconsistency identified in step 6 (Figure 4). You can view all of them, the five most important or the most important only (small button on top left of the map)
10. Based on the information from steps 6 and 9, assess if the main inconsistencies identified are expected or not, and if they can be explained. For this step, you may need to check the documentation describing the EU wide emission inventories: CAMS-REG ([Kuenen et al., 2022](#)); EDGAR ([JRC, 2024](#)); EMEP (The Informative Inventory Report (IIR) of the country).

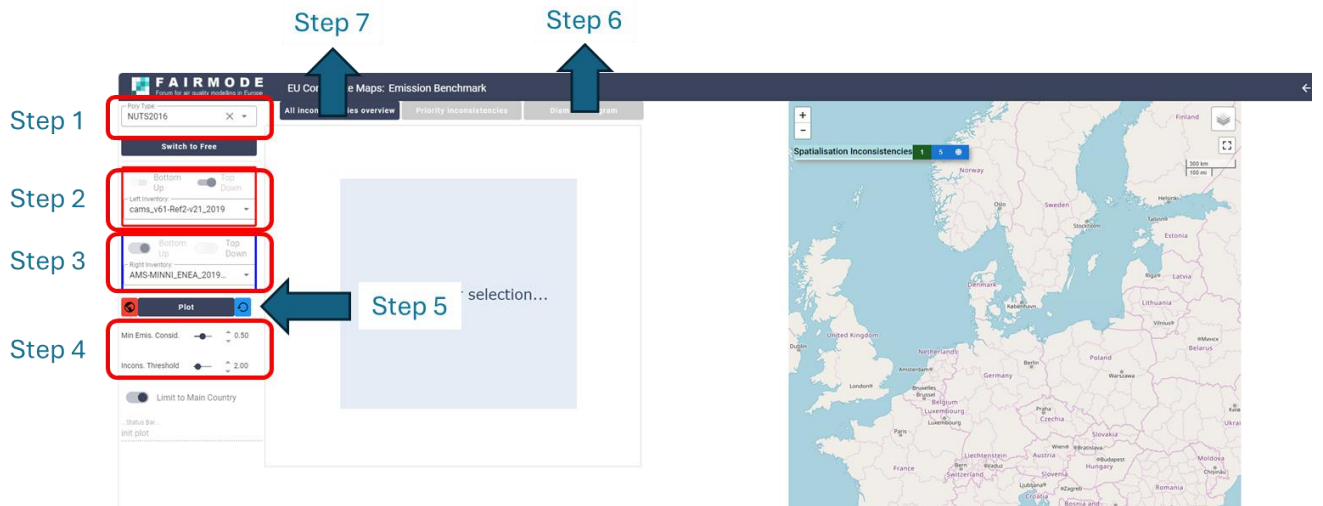


Figure 1: Home page of the Emission Composite Map, and steps 1 to 7 from the protocol.

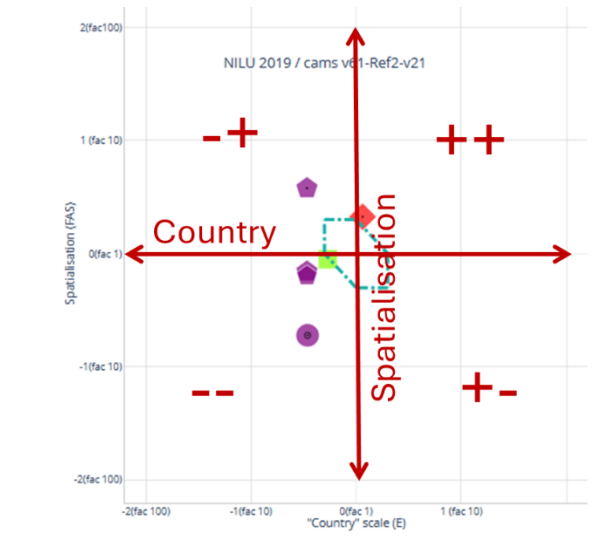


Figure 2: Diamond diagram

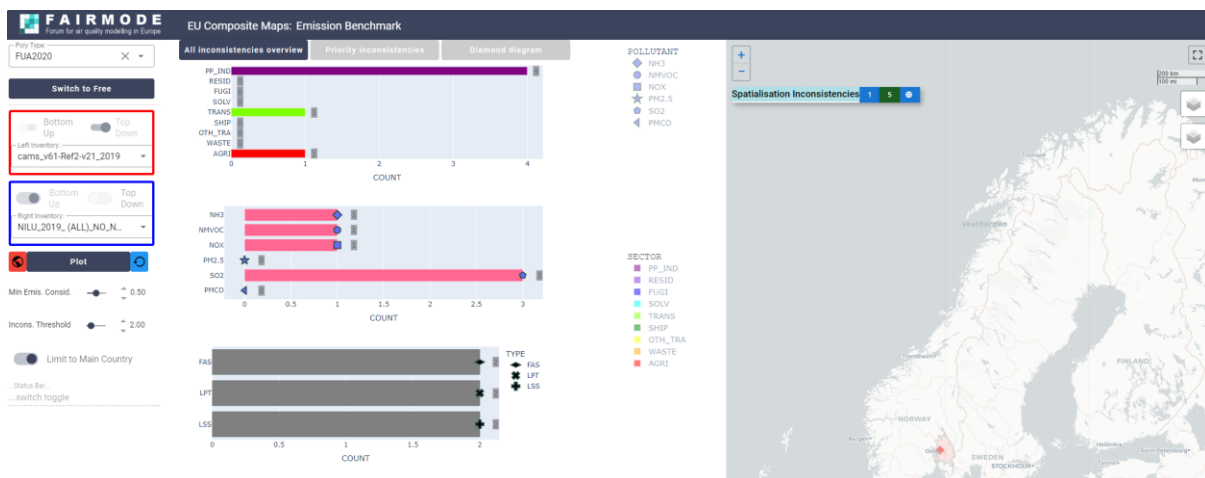


Figure 3: All inconsistencies overview (Step 7)



Figure 4: Main inconsistencies tab and map (Steps 7 and 8)

Questions for 2nd Webinar

- What are the main inconsistencies found?
- Are these inconsistencies expected?
- Is it possible to solve these inconsistencies?
- Are them the same in NUTS and FUA?
- Can we explain them?
- Are the inconsistencies the same when comparing to CAMS-REG and EMEP?
- What are the main lessons learned?
- Are you stuck at a certain point? Do you need additional information?